

REMARKS

Claims 1-30 are pending in the instant application after this amendment adds new claims 27-30. Claims 1, 3, 7-10, 12, and 16-26 are amended to clarify the subject matter recited therein. No new matter is added by the amendments, which find support throughout the specification and figures. For instance, new claims 29 and 30 are supported at least at paragraph 0122. In view of the amendments and the following remarks, Applicants respectfully request reconsideration of the present application.

The Office Action objects to claims 23-26 based on apparent informalities. These claims are amended to avoid any apparent ambiguity in the previously presented claims. Therefore, it is respectfully requested that the objections be withdrawn.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,055,605 to Sharma (hereinafter referred to as Sharma). Applicants respectfully traverse.

Claim 1 relates to a storage system that includes, *inter alia*, ***a plurality of data storage logical units (LUs)*** comprising ***a plurality of*** physical media, the plurality of LUs being adapted to receive commands, and responsive to the commands to store and recall data. In the storage system of claim 1, ***a plurality of ports, each*** port being adapted to maintain an LU command queue for each of the LUs.

The Office Action asserts that Sharma discloses the features of a data storage logical unit at element 150 of figure 3. Element 150 of Sharma is apparently a memory. Applicants previously amended the claims to clarify that the present invention is directed to ***a plurality of*** data storage logical units. The Office Action responds to this amendment by stating that it would be obvious to duplicate the system shown in figure 3 of Sharma. However, it is respectfully

submitted that duplicating the system in Sharma does not disclose or suggest the feature of claim 1 of a plurality of ports, each port being adapted to maintain a plurality of LU command queues, *each of the plurality of LU command queues corresponding to a respective one of the LUs.*

Since the Office Action admits that Sharma only discloses a single data storage logical unit, and since all of the purported ports of Sharma necessarily must correspond to that single logical unit, if any, then there is no disclosure or suggestion in Sharma relating to *any port having multiple command queues.*

According to the MPEP:

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, *the prior art reference (or references when combined) must teach or suggest all the claim limitations.* The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

(MPEP 706.02(j); Contents of a 35 U.S.C. 103 Rejection; citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); emphasis added). Since Sharma does not disclose or suggest any *port having multiple queues*, Sharma does not disclose or suggest all of the features of the instant invention. Additionally, there is no motivation presented to modify Sharma, and therefore for at least this additional reason, the rejection should be withdrawn.

Furthermore, in the interest of expediting prosecution, and for the purpose of clarifying the claimed subject matter, claim 1 has been amended to recite *a plurality of physical media*. As discussed above, Sharma only apparently discloses a single storage unit, element 150. Therefore, Sharma does not disclose or suggest a system including a plurality of physical media, as claimed.

In the present invention, there are multiple LUs, and multiple ports maintaining an LU

command queues for each of the plurality of LUs. The present invention is directed to systems having multiple LUs (see figures 1 and 2). Additionally, as previously discussed and as clarified by the current amendment, *each port* is adapted to communicate *with all of the LUs*, and has *a command queue for each of the LUs*. It is respectfully submitted that not only does Sharma not disclose the feature of multiple LUs, but Sharma also does not disclose *ports having multiple command queues*, and even more specifically, each of the multiple ports having an LU command queue for each of the multiple LUs. Therefore, Sharma does not identically disclose or suggest a storage system having a plurality of LUs and a plurality of ports, each port being adapted to maintain a plurality of LU command queues, each of the plurality of LU command queues corresponding to a respective one of the LUs. Since Sharma does not identically disclose or suggest all of the features of claim 1, the rejection should be withdrawn.

Claims 2-9, 19-21, 23, and 25 depend from claim 1 and are therefore allowable for at least the same reasons as claim 1 is allowable.

Additionally, and as argued in the previous amendment, claim 9 discloses the feature of the physical media comprising the data, and *the port being adapted to track changes of location of the data within the physical media*. The Office Action asserts that element 180 of figure 3, the coherence controller, discloses the feature of this claim. However, without admitting the veracity of the assertion that element 180 tracks data location changes, it is respectfully submitted that this does not disclose or suggest *each port* tracking changes of location of data. The Office Action asserts that elements 312/322, etc. disclose ports as recited in the claims. Applicant respectfully disagrees (see above), but even assuming *arguendo* that these ports are substantially similar to the ports as claimed, there is no indication in Sharma that these ports track changes of location of data within the physical media. The Examiner does not respond to

this argument as substantially previously submitted, and Applicants therefore respectfully request a proper response to this argument. Alternatively, Applicants submit that for at least this additional reason claim 9 is allowable.

Claims 19 and 20 are rejected based on Sharma, however *again* no citation or support is provided for the rejections. Applicants have no basis for responding to this incomplete rejection.

As the MPEP states:

35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, *the examiner should set forth in the Office action:* (A) the relevant teachings of the prior art relied upon, preferably *with reference to the relevant column or page number(s) and line number(s) where appropriate,*

(MPEP 706.02(j); Contents of a 35 U.S.C. 103 Rejection; emphasis added). Applicants have previously requested proper citations to references disclosing the features of the claims, and have not received a response. The Examiner apparently argues from inherency or personal knowledge. In either case, Applicants respectfully request a citation to Sharma, or a proper argument for inherency, or alternatively that the rejections be withdrawn.

Claim 10 includes features similar to those discussed above in regard to claim 1, and therefore for at least the same reasons as claim 1 is allowable, claim 10 is also allowable.

Claims 11-18, 22, 24, and 26 depend from claim 10 and are therefore allowable for at least the same reasons as claim 10 is allowable.

Additionally, claim 18 recites a feature similar to that discussed above in regard to claim 9, and therefore claim 18 is allowable for at least the same additional reason as claim 9 is allowable.

Additionally, Applicants again respectfully challenge the taking of Official Notice with respect to the claims 4 and 13, and assert that the feature of the command comprising a request according to a small computer system interface (SCSI) protocol is not a proper subject for Official Notice. As the MPEP states:

Official notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances. While "official notice" may be relied on, these circumstances *should be rare when an application is under final rejection* or action under 37 CFR 1.113. Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of *instant and unquestionable* demonstration as being well-known.

(MPEP 2144.03; emphasis added). It is respectfully submitted that the instant situation, in which a command using a SCSI protocol is used in a data storage system including a plurality of ports and physical media, is not a proper subject for Official Notice. The Examiner improperly relies on personal knowledge, thereby undermining the prosecution process by depriving the Applicant of the opportunity to examine and analyze the references. It is also respectfully submitted that there is no proper motivation presented for modifying Sharma, since the mere availability of alternative methodologies does not provide a proper motivation to modify a reference.

Applicants likewise challenge the blanket use of Official Notice with respect to claims 21-26, which deprives the Applicant of the opportunity to review and analyze references being used against the application. Applicants respectfully assert that the recited features are not a proper subject for Official Notice. It is also respectfully submitted that there is no proper motivation presented for modifying Sharma, and the assertion that incorporating such a technology would be time saving and efficient is improper.

In particular claims 23 and 24 recite the feature that the physical media are slow access time non-volatile physical media, and claims 25 and 26 recite the feature that a particular physical media of the plurality of physical media changes over time. Neither of these subjects is appropriately rejected based on Official Notice. Applicants submit that slow access non-volatile media used in the context of a data storage system using a plurality of ports and a plurality of LUs is not so well-known as to be a proper subject of Official Notice. Applicants also submit that a time variant set of physical media, in the context of a data storage system using a plurality of ports and a plurality of LUs is not so well-known as to be a proper subject of Official Notice. Therefore, for at least this additional reason claims 23-26 are allowable.

New claims 27 and 29 depend from claim 1, and new claims 28 and 30 depend from claim 10, and therefore each of these claims is allowable for at least the same reasons as their respective base claims are allowable. Additionally, claims 27 and 28 recite the feature each data storage logical unit (LU) is distributed across a plural subset of the plurality of the physical media. It is respectfully submitted that Sharma does not disclose or suggest this feature, and therefore, for at least this additional reason claims 27 and 28 are allowable.

Similarly, claims 29 and 30 recite the feature that the port converting the received command to the one or more converted commands includes converting a logical block address and a length of a data string included in the received command, and wherein the converting operation performed by the port also determines if the command is one of a read command and a write command. It is respectfully submitted that Sharma does not disclose or suggest this feature, and therefore, for at least this additional reason claims 29 and 30 are allowable.

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CONCLUSION

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

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